REMARKS

Please reconsider the application in view of the above amendments and the following remarks. Applicants thank the Examiner for the thorough review of the application.

Rejections under 35 U.S.C. § 102

Claims 1-2, 5-8, and 13-16 were rejected as being anticipated by U.S. Patent No. 6,302,223 ("Sinor"). Claim 2 has been cancelled by this reply, rendering the rejection of this claim moot. Claims 1 and 10 have been amended. To the extent this rejection applies to the amended claims, it is respectfully traversed.

Claims 1 and 10, as amended, include the limitation of a non-planar interface between the substrate and the diamond table. The non-planar interface, as disclosed in the specification, relates to the texture formed on the surface of the substrate (Paragraph 30). Sinor discloses a drill bit comprising a bit body having a blade and a polycrystalline diamond compact cutting element disposed on the blade, however, Sinor does not teach or suggest a non-planar interface between the substrate and the diamond table. Accordingly, because Sinor does not disclose this limitation, claims 1 and 10 are patetably distinct over Sinor.

Further, Sinor does not disclose a polycrystalline diamond compact cylindrical cutting element, rather Sinor only discloses stud cutters. As discussed in the disclosure of the instant application, large insert sizes have been attempted, but have largely been unsuccessful due to the inability to manage the various stresses on the PDC layer and substrate, including axial, radial and hoop stresses, that are a major cause of failure of such cutters (Paragraph 4 in the Specification).

While PDC cutter known as a "stud cutter" are sometimes known to have a larger exposure, prior art cylindrical cutters having round or elliptical cross sections have exposures of less than 10.0 mm by comparison (Paragraph 27 in the Specification). Accordingly, it is an advantage of this invention that a larger diameter cylindrical cutter can be designed that will have a larger brazeable surface area for bonding to the diamond layer, allowing for an increased diamond table thickness over prior art cylindrical cutters, without increasing the deleterious effect of such stresses on the bond between the substrate layer and diamond layer.

Claims 1 and 10, as amended, include the limitation of a polycrystalline diamond compact cylindrical cutting element. Because Sinor does not disclose this limitation, claims 1 and 10 are patentably distinct over Sinor.

Accordingly, withdrawal of this rejection is respectfully requested for the reasons discussed above. Dependent claims 5-8, and 13-16 are patentable for at least the same reasons. If the Examiner wishes to maintain her assertion that non-planar interfaces are disclosed in Sinor, then the Applicants respectfully requests that the Examiner direct the Applicants to the portion of corresponding section in Sinor.

Rejections under 35 U.S.C. § 103

Claims 1-27 were rejected by the Examiner as being obvious over Sinor. Claim 2 has been cancelled by this reply, rendering the rejection of this claim moot. Independent claims 1, 10, 18, 26, and 27 have been amended to include the limitation of cylindrical cutting elements and the limitation of a non-planar interface between the substrate and the diamond table. To the extent that this rejection applies to the amended claims, it is respectfully traversed.

Sinor discloses a drill bit comprising a bit body having a blade and a polycrystalline diamond compact cutting element disposed on the blade. However, Sinor does not disclose or suggest a non-planar interface between the substrate and the diamond table. MPEP § 2143.04 requires that all the claim limitations must be taught or suggested by the prior art to establish prima facie obviousness of a claimed invention, *In re Royka*, 490 F.2d 981, (CCPA 1974). Further, all words in a claim must be considered in judging the patentability of that claim against the prior art. *In re Wilson*, 424 F.2d 1382, 1385, (CCPA 1970). Sinor does not meet this burden as Sinor does not suggest or disclose using a non-planar interface with a cylindrical cutting element to decrease stress related failure of the cutting element.

Further, Sinor does not disclose or suggest a polycrystalline diamond compact cylindrical cutting element. Rather, Sinor is directed towards stud cutters, which is in sharp contrast to the teachings of the present invention (*see* paragraph 27 in the Specification, as discussed above). It is well known in the art, that stud cutters are usually brazed or force fitted into cylindrical holes formed in the cutting face, *see generally* U.S. Patent 5,947,216 (filed November 24, 1997). Sinor uses analogous language to describe the cutters stating that "cutters

might be secured to elongated studs, the ends of which would be inserted, as by press fitting, into apertures drilled into blade" (col. 7, ll. 11-13). One skilled in the art would understand this to be a description of a stud cutter. Thus, Sinor does not disclose or suggest using cylindrical cutters (distinct from cylindrical cutting faces) and further the specification of the instant case teaches away from using stud cutters.

Accordingly, Sinor does not teach or suggest all the limitations of the present invention as claimed, and further teaches the use of stud cutters, in contrast to the teachings in the instant application. Thus, amended claims 1, and 3-27 are patentably distinct over Sinor for at least these reasons and accordingly, withdrawal of this rejection is respectfully requested.

New claim(s)

New claim 28 is patentable for at least the same reasons discussed above.

Conclusion

Amended claims 1, and 3-27, have been shown to be allowable over the prior art. Applicants believe this reply to be fully responsive to all outstanding issues and place this application in condition for allowance. If this belief is incorrect, or other issues arise, do not hesitate to contact the undersigned or his associates at the telephone number listed below. Please apply any charges not covered, or any credits, to Deposit Account 50-0591 (Reference Number 05516.088001).

Respectfully submitted,

Date: 7/2/03

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